Demand, Regulation, and Welfare on the Margin of Alternative Financial Services*

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Abstract

We use a nonlinear reduction in a bank's check-cashing fees and variation in regulated check-clearing times to identify the elasticity of demand for cashing checks rather than depositing them. We find that an extra day of check-clearing time makes account holders 65.5% more likely to cash a check than deposit it, which implies they are willing to pay $11.17 per day for faster access to their funds — an effective annualized discount rate of 11,054% for the average check. We use this elasticity to evaluate recent proposals that mandate faster check-clearing times.

Keywords: Alternative Financial Services, Check Cashing, Financial Regulation

JEL: D14, G12

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1 Introduction

Paper checks remain a ubiquitous form of payment in the United States, with 14.5 billion written each year and 40% of Americans regularly receiving them (Greene et al. 2020). At the same time, over 5% of U.S. households do not have access to a checking account that would allow them to deposit their checks without paying a fee and 17% use alternative financial services (AFS) such as check cashers that charge fees to convert checks into a useful medium of exchange (Kutzbach et al. 2020), paying a total of $1.7 billion to do so in 2018 (Graham & Golden 2019). More recently, over three million paper checks from the Coronavirus Aid, Relief, and Economic Security (CARES) Act were cashed through check cashers, resulting in an estimated $66 million in check-cashing fees (Murphy 2021).

In this paper, we provide novel, policy-relevant evidence on how service fees and check-clearing times affect "underbanked" individuals on the margin between AFS and the mainstream banking system. We do so by using transaction data from a bank that offers both regular checking accounts and the alternative financial service of check cashing, which presents a unique opportunity to study the choice between AFS and mainstream banking because most banks do not offer AFS and AFS providers cannot offer mainstream products due to various banking regulations. By studying a bank located in the South Bronx, New York, that offers customers an explicit choice between both services, we can isolate the effects of check-cashing fees and check-hold times from other factors that might lead a marginal consumer to favor AFS over traditional bank accounts, such as convenience, customer service, financial acumen, or distrust of the banking system (Schneider & Longjohn 2014, Burhouse et al. 2014). In addition, the bank we study introduced a large, nonlinear change to its check-cashing fees during our sample period, allowing us to cleanly identify how check-cashing prices affect demand.

We find that many deposit-account holders willingly pay high fees to accelerate access to their funds, with customers becoming much more likely to cash their checks than deposit them when they have to wait longer for their checks to clear through the banking system: an extra day of check-clearing time makes account holders 65.5% more likely to choose check cashing over

making a deposit, with a 95% confidence interval of 44.0–87.1%. Our estimates imply that the bank's average customer is willing to pay the equivalent of $11.17 per day to speed up access to his or her cash, an effective annualized discount rate of 11,054% for the average check. This willingness to pay is even higher among lower-income households, and our main results are robust to specifications that account for the potential confound of weekends and holidays. Notably, these estimates are the first in the literature derived from individual choice data — rather than from surveys — that show how accelerating access to funds affects consumers, helping illuminate the potential impact of the Federal Reserve's proposal to expedite the federal accounts clearing house payment system (Estep 2014, Federal Reserve System 2015).

A key reason to study why households use AFS is that the costs of doing so tend to be very high relative to mainstream products. Payday loans often have APRs exceeding 400%, which is more than ten times greater than the rate of most credit cards (Bertrand & Morse 2011), while the implicit APRs for check cashing can be even more staggering: paying 2% of a check's face value to receive cash immediately rather than depositing the check and waiting two days for it to clear corresponds to an effective APR of 3992%. Consumer advocates view these high fees as predatory, arguing that AFS providers abuse their market power to exploit a vulnerable and financially unsophisticated population, as people of color, with less education, and with lower incomes are all more likely to use AFS (Caskey 1994, Rhine et al. 2006, Berry 2005, Burhouse et al. 2014). In 2019, for instance, 13.8% of Black households and 12.2% of Hispanic households lacked a bank account compared to just 2.5% of white households (Kutzbach et al. 2020), making high AFS fees a disproportionately large burden for these groups. Moreover, nearly one-third of U.S. households live hand-to-mouth, in the sense that they hold little or no liquid wealth, making them dependent on AFS to meet their everyday financial needs (Kaplan et al. 2014).

Previous studies have examined AFS regulations, mostly in the context of payday loans. Campbell et al. (2011) provide a comprehensive review of this topic and argue for stronger protections, especially given the vulnerability of many AFS users. To this point, Lusardi & Scheresberg (2013) find that individuals with limited financial literacy, "lacking basic numeracy and knowledge of basic financial concepts," are more likely to use high-cost AFS-types of

credit. Behavioral biases also influence decisions, with Bertrand & Morse (2011) finding that customers with more information about fees think less narrowly about finance costs and borrow less, while Skiba & Tobacman (2008) find that payday loan borrowers exhibit partially-naive, quasi-hyperbolic discounting. Others have studied how access to payday lenders correlates with measures of financial distress, finding mixed results.[1]

We seek to fill a gap in the literature on AFS by studying the choice between using check cashing and mainstream accounts. Although others have used survey-based approaches (Rhine et al. 2006, Berry 2005, Barr 2012, Schneider & Longjohn 2014), no prior work has used data from individuals' transactions to examine (i) how consumers respond to check-cashing fees and check-clearing times or (ii) why many households with access to traditional checking accounts nevertheless choose to pay high check-cashing fees instead of depositing their checks and then withdrawing funds later at no additional charge. As the answers to these two questions lie at the heart of AFS regulations, evaluating individual-level transaction data can provide insights for policymakers beyond what can be learned from surveys.

We use our demand estimates to evaluate how financial regulations that permit banks to delay access to deposited funds and place caps on check cashing fees — currently set at 2.27% in New York — affect consumer welfare. Because deposit-account holders become less likely to cash their checks when they face a shorter wait to access their funds following a deposit, we argue that the choice to pay relatively high AFS fees is driven in large part by the desire for immediate access to cash. We estimate that changing the maximum check-hold time to one day would reduce the use of check cashing by 55.0% for deposit-account holders, while increasing the state rate cap to 3% in conjunction with shorter check-hold times would reduce it by 70.1%. Taken together, these findings highlight a tension between regulations that limit check-cashing fees and other initiatives that promote a greater use of mainstream deposit accounts among the quarter of Americans who are unbanked or underbanked.

[1]Melzer (2011) shows that access to payday loans leads to difficulty in meeting financial obligations like mortgage payments. Morse (2011) shows that the presence of payday lenders mitigates financial distress following a natural disaster. Dobbie & Skiba (2013) show that payday borrowers are less likely to default on larger loans. Zinman (2010) shows that restricting access to payday loans worsened the overall financial condition of Oregon households. Fusaro & Cirillo (2011) show that repayment and renewal rates for payday loans are not affected by the interest rate.

Our results also relate to recent policy proposals to transition from paper checks to electronic payments. In the last month of the Trump administration, for example, the Consumer Financial Protection Bureau gave regulatory safe harbor to PayActiv, a company that works with employers to offer employees access to their earned but yet-to-be-paid wages via cards that load value and enable payments electronically for a charge of $1 per day of borrowing, with employees' fees capped at $3 per week and $5 for two weeks (CFPB 2020). Although such initiatives seek to expedite access to funds, individuals still face inter-temporal tradeoffs given their comparatively high APRs. Similarly, at the start of the Covid-19 pandemic, the U.S. Treasury worked to send payments to every family. Most could access their funds within a few days because they went by direct deposit based on existing information from prior tax payments, but roughly a fifth of payments needed to be sent as paper checks (Murphy 2021). Compared to direct deposit, check printing time delayed sending and physical travel time delayed arrival.

2 Background on Check Cashing

The bank for our study, Spring Bank (formerly CheckSpring Bank), opened in 2007 with a mission to serve the needs of the underbanked by combining traditional banking and AFS. The area immediately surrounding Spring Bank is populated primarily by people of color on the financial margins: 26% have no bank account and 30% are underbanked (Ratcliffe et al. 2015).

Demand for check cashing typically comes from two distinct groups (Berry 2005, Barr 2012, Rhine et al. 2006). First, those who lack a traditional bank account rely on check cashers for their everyday financial transactions, like cashing checks or paying utility bills, including those who have been excluded from the mainstream banking system as a result of past misconduct and those who actively avoid it for various reasons, such as high minimum balance requirements and unpredictable fees (Kutzbach et al. 2020). Second, even some who have a traditional bank account may still use a check casher if they want cash in excess of their current balances or simply find using a check casher more convenient.

As described in Caskey (1994, 2002), the typical check-cashing outlet is a free-standing busi-

ness, although some retailers such as Walmart offer similar services. In addition to cashing checks, check-cashing outlets commonly provide other financial services, including utility payments, pre-paid debit cards, money orders, and wire transfers. In some states, check cashers also offer payday loans.

AFS fees tend to be high compared to those for equivalent transactions in a mainstream account, in part because the costs of providing AFS are large relative to the size of transactions. Most check cashers remain open for 10–12 hours per day, resulting in long idle periods for staff, and incur interest expenses on the funds they advance that must be subsequently cleared through the banking system.

Check cashers use both manual and automated processes to manage the risk of cashing bad checks. They require new customers to present photo identification; only accept checks issued by corporations, organizations, and government agencies, generally refusing personal and third-party-endorsed checks; manually verify a check's authenticity by calling payers or issuing banks; and use commercial data vendors to assess a customer's risk profile. As a result of these safeguards, modern check-cashing outlets tend to suffer negligible losses from bad checks. In an analysis of Dollar Financial, the nation's largest publicly-traded check-cashing company, Bradley et al. (2009) find that net write-offs of bad checks were just 0.31% of face value in 2008 compared to average fees of 3.11%. They conclude that, "given the generally low-risk nature of most checks cashed, losses tend to be low." Likewise, Spring Bank has only cashed two bad checks since its founding.

Check-cashing services are regulated on multiple levels in the U.S. Historically, states regulated check cashing individually (Fox & Woodall 2006), but more recently the Consumer Financial Protection Bureau (CFPB) has acted at a national level "to stand on the side of consumers and ensure they are treated fairly in the financial marketplace" (Cordray 2014), with Dodd-Frank explicitly including the regulation of check cashers in the CFPB's purview (Hawkins 2011).

In New York, check cashers must obtain a license from the state's Department of Financial Services, and the state places two major regulations on check cashers, a rate cap and a bar against opening within 0.3 miles of an incumbent check casher. These two regulations are purportedly

designed to complement one another: the rate cap is meant to protect consumers from "exorbitant" prices, whereas the local monopoly protects check cashers' "reasonable" profitability and continued operation.

Each year in February, New York updates its ceiling for check-cashing rates, which since 1993 has risen from 1.1% of face value (or $1 for small checks) to the current rate of 2.27%. Check cashers typically charge the maximum price allowed by state law. Fox & Woodall (2006), for instance, surveyed 21 check cashers in New York and found that 20 charged the state maximum of 1.64% that year, with the other charging 1.58%, while an earlier survey in 1987 found all New York check cashers charged the prevailing state cap at the time.

Banks face different regulations and could provide direct competition to check cashers. Banks can open full-service branches close to check cashers and offer all of the same services (subject to approval from their own regulators), although very few have done so. Most banks refuse to cash government checks for those without deposit accounts because they would incur costs handling the checks, worry about crowding their lobbies with public aid recipients, and fear that fraudulently claimed income-tax refund checks might be cashed for which they would not be reimbursed (U.S. General Accounting Office 1988). Even for their own account holders, banks generally require that they first deposit the check and then make the funds available only after the check clears, taking up to five business days. Federal regulations limit how long a bank can hold funds from a deposited check, and most banks adhere to the maximum length.

Just like at a check-cashing outlet, customers without a deposit account at Spring Bank can cash their checks for a fee. Account holders can also cash a check without waiting for it to clear if they do not have enough covering funds in their accounts; instead, the bank charges a fee only on the uncovered portion of the cash. To our knowledge, only one other bank in New York provides this type of service.

Spring Bank's check-cashing prices have varied throughout its history, often diverging widely from competitors at the state cap. Between October 2008 and February 2012, New York's cap for cashing a check above $100 increased from 1.75% to 1.86%, and all check cashers that we and the bank staff are aware of always charged the maximum amount allowed. Initially, Spring

Bank also charged the state cap but held steady at 1.75% when the state re-indexed its rate each February. Then, in March 2012, Spring Bank substantially changed its fee structure.[2] Under the new pricing scheme, checks up to $1000 could be cashed for a $1 fee and checks above $1000 for 1% of face value, as shown in the top panel of Figure 1. The new menu introduced large, nonlinear price changes. A $500 check, for instance, cost a customer $8.75 to cash before the price change and $1 after, an 88.6% reduction, whereas the fee for a $1000.01 check dropped from $17.50 to $10, a comparatively smaller 42.9% reduction. To the best of our knowledge, Spring Bank's competitors did not respond to the price cut by cutting their own prices or changing their services in any way. We monitored the closest five check cashers in the months before and after the price change and none changed their prices or operations noticeably — all charged the state cap during this entire period.

3 Choosing Between Cashing and Depositing Checks

Our data come from transactions that took place between October 2008 and March 2014 at Spring Bank's main branch from customers with checks between $100 and $5,000 and primary addresses within three miles of the bank. To protect customers' privacy, Spring Bank removed all identifying information from the data and provided an anonymized index number that links each customer to his or her transactions. For each transaction, we have data on the customer's index number, distance from Spring Bank, and deposit-account status; the date; the check's face value; and the fee paid.

In a typical month during our sample period, Spring Bank cashed an average of 468 checks from 239 unique check-cashing customers with an average face value of $549 and a total check-cashing volume of $253,000. Of these 239 customers, about 70 (29.3%) each month also had a deposit account at Spring Bank, making them underbanked.[3] Compared to those without

[2] As a former director of Spring Bank, Sojourner participated in the decisions that led to these changes.

[3] Because not all customers visit the bank each month, our sample includes 869 deposit account holders who ever use check cashing among the 2,494 deposit account holders in our data. Although this presents a unique opportunity to study the underbanked population using transaction data, findings from one bank may not apply more generally.

deposit accounts at Spring Bank, and who therefore may be unbanked, those who have a deposit account in our data differ in notable ways from those who do not. Deposit-account holders have made four more transactions overall (≈50%), with a total face value more than one and a half times as large, and live 0.2 miles closer to Spring Bank. Because we have a full transaction history for customers with deposit accounts (i.e., we observe both check cashing and deposits) and are primarily interested in studying the choice between using traditional banking services and AFS for those who have access to both, we focus our analysis on this segment of customers in what follows.

As opposed to a checking account that bundles together payment and savings features, check cashers' offerings separate these two functions: at a check casher, customers can immediately convert their checks to cash that they can then use to purchase money orders for making payments. An important choice for deposit-account holders at Spring Bank is therefore whether to cash their checks for a fee and receive funds straightaway, or to avoid fees by depositing their checks and then waiting until they clear through the banking system before making payments.

Spring Bank follows federal banking regulations for making funds available after a deposit: same day availability for direct deposits, wire transfers, cash, and checks drawn on Spring Bank; next business day availability for cashier's, certified, teller's, or government checks, and the first $200 of other checks; second business day availability for the remaining balance of other checks up to $5000; and fourth business day availability for the amount over $5000 (we only consider checks up to $5000).

Summary statistics for those with deposit accounts appear in Table 1. The data include 46,669 transactions from 2,494 unique customers. Among these checks, 81.97% were deposited, with the remainder cashed for a fee.[4] The average implicit fee is $10.22, which includes the hypothetical fee that would have been charged on deposited checks had they been cashed instead; for checks that were actually cashed, the average fee is $5.04. The average check in this sample has a face value of $840.19, which is well above the average of $525.93 for those who cash their checks. Checks on average would take 2.6 days to clear completely, with roughly half needing two days.

[4]Our data exclude ATM and direct deposits, as we focus on transactions conducted at the window.

Much of the variation in check-hold times comes from deposits made on Fridays that require a four-day hold for checks greater than $200, which make up approximately 25.7% of transactions. A small portion, 3.5%, would take five days to clear because they were deposited the day before a three-day holiday weekend (e.g., the Friday before Memorial Day). Because unobserved factors associated with weekends and holidays may cause an atypical shift in the demand for cash (e.g., holiday shopping), we consider three specifications below to test if our results are robust to such potential confounds.

Panel (a) of Table 2 shows that, following Spring Bank's price cut for check cashing, the likelihood of cashing a check instead of depositing it increased from 13.6% to 22.2%. Notably, this rate varies over the potential hold time a customer faces. In the pre-cut period, the share cashed ranged from 7.1% for checks facing a potential one-day hold to 20.7% for those facing a potential five-day hold. These shares went to 12.6% and 34.6%, respectively, after the price cut.

As shown in panel (b), an account holder's income also relates to the decision to cash or deposit a check. Low-income account holders — defined as those with between six and twenty-four checks in a year adding up to less than $20,000, the federal poverty level for a family of three at the time of our study[5] — opt for check cashing more than 20% of the time, which compares to less than 5% of the time for those making more than $20,000 based on our imputed measure of paychecks. This propensity also depends on check-hold times, as the rate for those with high incomes increases by less than half a percentage point for longer holds but increases by nearly 24 percentage points for those with low incomes.

Finally, in panel (c) we consider a preliminary robustness check for potential holiday and weekend confounds. We restrict the sample in panel (c) to checks between $150 and $250 for non-holiday transactions occurring Monday through Wednesday. Given federal banking regulations, the first $200 of these checks will be made available the next business day, with the remainder above $200 made available in two business days. Over this narrow range of face values, all unobservable features of the transactions should be equivalent except that checks above $200 require an extra day to clear fully. This provides a plausibly exogenous increase in check-clearing

[5]We do not have a precise measure of customers' incomes and our proxy will not capture other sources (e.g., cash) or institutions. Despite these limitations, we nevertheless consider it a useful measure.

time not confounded by holiday or weekend effects, and customers with checks between $200 and $250 are more than twice as likely to cash their checks than those with checks between $150 and $200, suggesting that the extra day of waiting has a large influence.

We estimate the demand for cashing a check relative to depositing it among deposit-account holders from the following specification:

$$U_{ict} = \alpha Fee_{ict} + \lambda Days_{ct} + \gamma X_{ict} + \varepsilon_{ict}, \tag{1}$$

where the key variables are the associated check-cashing fees in dollars, Fee, and the number of days it would take the check to clear if deposited, $Days$.[6] Transactions are indexed by customer, i, for check, c, at time, t.

For identification of α, Spring Bank's price cut provides extensive and exogenous price variation across our panel and across face-value amounts, with prices changing by different amounts at different face values. The key identifying assumption is that the mean of unobserved influences on demand, ε_{ict}, is independent of price conditional on other observed variables. We therefore implicitly assume that the arrival of checks to consumers is exogenous and not influenced by check-cashing fees (e.g., that customers do not respond to price changes for check cashing by asking their employers to pay them via direct deposit or cash). We also assume that customers with a deposit account at Spring Bank do not have one elsewhere or use other AFS providers — if they did, this would alter their outside options. Although we cannot be certain, we and the bank believe that few of their customers have a deposit account at another institution because (i) very few banks operate in the surrounding area and (ii) Spring Bank offers competitive terms for its accounts, so a typical customer who uses Spring Bank's check-cashing service and also wants a deposit account likely would use Spring Bank's.

For identification of λ, we rely on the natural variation in check-hold times induced by the

[6]Some customers have balances that exceed the face value of their checks and would not incur check-cashing fees if they immediately withdrew funds equal to the amount of the check; that is, they do not actually face a choice between depositing and cashing a check unless they want funds exceeding their current balance. In that case, we will understate the elasticity of substitution because that customer's choice is deposit by default, making our estimate conservative.

face value of the check and the day of the deposit. Although check-hold times are not strictly exogenous since customers choose when they visit the bank after receiving a check, we contend that most cash or deposit their checks as soon as possible, perhaps best reflected by an above-average number of transactions on typical paydays like the last day of the month. Furthermore, we find no direct evidence of selection bias stemming from check-hold times, as the correlation between the number of transactions on a given day and the corresponding check-hold time is not statistically significant, and likewise for the correlation between check-hold times and (i) the average face value of checks, (ii) the proportion of low income customers, and (iii) the distance customers travel to the bank. Lastly, the average check-clearing time is 2.6 days both before and after Spring Bank's fee change, suggesting that lower check-cashing prices did not lead to a different mix of checks among account holders.

Taken together, our long panel of transactions, the price changes, and variation in check-hold times provide a compelling identification strategy for estimating customers' sensitivity to check-cashing prices and check-clearing times. For example, the fee for cashing a $1,000 check varies abruptly and exogenously from $17.50 to $1 during our sample period, while unobservable transaction determinants — neighborhood population, local economic conditions, and substitute products — remain stable.

Table 3 shows the results from a series of logit regressions in which the dependent variable is one if the customer cashes a check and zero if he or she deposits it. Across all specifications, we control for the day of the week, the month, the customer's distance from Spring Bank, and the check's face value. We cluster standard errors by customer, although statistical inference remains robust to other levels of clustering.

Our estimates imply that higher check-cashing fees make customers less likely to cash their checks and longer potential check-hold times make them more likely to, with the marginal effects derived from specification (1) showing that an extra day of holding time increases the likelihood of cashing a check by 65.5%, with a 95% confidence interval of 44.0–87.1%. Fees affect this decision in the expected way, with an elasticity of demand of -0.5 and a 95% confidence interval ranging from -0.3 to -0.7. As a benchmark, the estimated parameters suggest that adding

an extra day of potential hold time — from one day to two — is equivalent to a fee increase of $11.17. On an average check of $840.19, that represents a daily discount rate of 1.3%, an effective annualized discount rate of 11,054%.[7] Specification (2) includes account-holder fixed effects, and all estimated coefficients remain statistically indistinguishable from (1).

Specification (3) shows that the likelihood of cashing a check increased 78.2% in the post-cut period, with a 95% confidence interval of 35.3–121.1%, whereas the impact of an extra day of holding time is largely the same as in specification (1), at 69.4% and a 95% confidence interval of 49.3–90.2%. In specification (4), we restrict our sample to customers who made at least one transaction before Spring Bank's price cut, as this group may be less susceptible to concerns of selection bias since they were not drawn to the bank by the promotion. These account holders are less sensitive to check-clearing times, with an extra day associated with a 41.3% probability of cashing a check and a 95% confidence interval of 19.2–63.5%, although we cannot reject that this coefficient is the same as the one from the full sample in specification (1), with $p > 0.10$, suggesting that selection into the sample following the price cut is not biasing our results.

In specification (5), we find that those with low incomes (based on our imputed measure using likely paychecks) are 232.9% more likely to cash a check than those with incomes above $20,000, with a 95% confidence interval of 15.8–450.2%. Furthermore, specification (6) includes an interaction term between having a low income and the number of days until a check clears, the check-cashing fee, and the check's face value, showing that the effect of check-hold times is nearly twice as large for those with low incomes. These results also imply that the amount of the check-cashing fee in relation to the check's size only matters for low-income customers. Paying a $10 fee on on $200 check (5%) compared to a $500 check (2%) reduces a low-income customers likelihood of cashing the check by 12.1%, with a 95% confidence interval of 3.9–20.3%, whereas for those with incomes above $20,000 the effect is not statistically significant.

We also consider three specifications to test whether our results are confounded by unobserved factors associated with weekends and holidays that may cause an atypical shift in the demand for cash (e.g., holiday shopping). First, we restrict our sample to checks between $150 and $250 for

[7] Calculation based on annualized discount rate of $(1.013)^{365} - 1$.

non-holiday transactions occurring on Monday, Tuesday, or Wednesday. As discussed for panel (c) in Table 2, all unobservable features of these transactions are likely equivalent except that checks above $200 require an extra day to clear fully. This provides a plausibly exogenous increase in check-clearing time not confounded by holiday or weekend effects, and the likelihood of cashing a check remains statistically significant and economically meaningful, more than doubling when the check-clearing time increases by a day, as shown in specification (7).

As a second robustness check, we restrict the sample to transactions made Monday through Thursday. Doing so removes any "weekend effect" from the set of possible confounding factors, with identification coming solely from variation generated by holidays that occur during the week. As shown in specification (8), an extra day of holding time given this sample restriction increases the demand for check cashing by 91.1%, with a 95% confidence interval of 61.5–120.6%.

Finally, we restrict the sample to transactions made on the last business day before holidays that occur on different days of the week depending on the year: Independence Day, Christmas Day, New Year's Day, and Veteran's Day. Here the potential confounding factors related to holidays remain fixed, but because these holidays occur on different days of the week each year, the number of days needed to clear a check varies. In specification (9), we find that an extra day of check-clearing time during one of these floating holidays leads to a nearly fivefold increase in the demand for check cashing, although we cannot reject that the effect is the same as in specification (7).

4 The Impact of Check Clearing & Cashing Regulations

Federal regulations specify check-clearing times based on the day a check is deposited, and consumer advocates have called for reducing maximum hold times (Fox & Woodall 2006), which is consistent with our finding above that consumers strongly prefer a shorter wait for accessing their funds. Lower check-cashing fees also prompt more customers to cash their checks rather than deposit them, with this decision directly tied to how long their checks take to clear. Because many states cap check-cashing rates, they may be reducing the use of mainstream deposit accounts since

check cashing is viewed as a better overall value compared to waiting several days to access funds. To encourage a greater take-up of mainstream accounts, our analysis suggests that an effective policy would be to make deposited funds available more quickly. From a practical standpoint, such a policy seems feasible in light of innovations that automate most check processing and make three-day holding periods over a weekend superfluous. Banks clearly profit from the float, but long check-hold times harm consumers, especially the poorest and most credit-constrained, which has spurred proposals to improve the banking system by accelerating check-clearing times, such as the Federal Reserve System's proposed FedNow instant payment service.

Given this motivation, we consider a counterfactual in which all deposits at Spring Bank are cleared within a day, rather than making depositors wait up to five. Based on our results from Table 3, a universal one-day hold would result in a decrease in check cashing from 18.0% of transactions to 8.1% among deposit-account holders, a 55.0% reduction. To provide a sense of scale, we can extrapolate the findings from Spring Bank to the national level, where a 9.9 percentage point decline in check cashing among deposit-account holders would amount to a savings of $52.6 million in check-cashing fees for this population each year based on estimates from Schneider & Longjohn (2014).[8] Moreover, given the estimated willingness to pay of $11.17 per day to accelerate check clearing among the underbanked in specification (1) of Table 3, a maximum hold of one day would generate $312 in consumer surplus per underbanked household each year, or $10.6 billion in total.[9]

Another policy lever to promote deposit accounts would be to make check cashing less attractive by increasing the rate cap. Although this would reduce consumer welfare for those who predominately use check cashing, it would nevertheless move more customers towards mainstream accounts; policy makers could then decide how to trade off these competing objectives. Increasing the rate cap to 3.0%, for instance, would reduce the number of checks cashed instead

[8] At Spring Bank, 29.5% of check-cashing transactions are from deposit-account holders. Assuming 29.5% of $1.8 billion nationwide check-cashing fees in Schneider & Longjohn (2014) are attributable to this group, saving 9.9% of that annually totals $52.6 million.

[9] Assumption based on last twelve months of our sample period for Spring Bank deposit-account holders who cashed at least one check (i.e., underbanked). Burhouse et al. (2014) estimate that 34 million underbanked households exist nationwide and Spring Bank's underbanked customers average 6.9 checks with two-day holds, 1.4 with three-day holds, 5.3 with four-day holds, and 0.6 with five-day holds.

of deposited to 12.2%, a 32.3% decline. Using both levers simultaneously would have an even larger effect, bringing the number of checks cashed by deposit-account holders down to 5.4%, a 70.1% reduction. Increasing the rate cap in this way may drive some check-cashing customers to other AFS products like payday loans, however, obscuring the overall welfare impact.

5 Conclusion

Many Americans face a choice between using mainstream bank accounts or alternative financial services. In this paper, we have specifically examined those on the margin between these two types of providers. Our findings have important implications for regulators and others interested in low-income households' financial decisions.

Account holders in our study exhibit a strong preference for receiving cash immediately rather than waiting to access their funds. Based on our analysis, the average customer is willing to pay the equivalent of 1.3% per day to avoid waiting for his or her check to clear — which compounds to a staggering 11,000% effective APR. Low-income customers are willing to pay even more to receive their cash immediately, which could stem from time preferences in the form of either a high discount rate or present-bias (Laibson 1997). Alternatively, low-income account holders are likely credit-constrained and may urgently need access to their funds to avoid incurring late fees or penalties. These customers would greatly value shorter hold times. We estimate that imposing a maximum hold of one day would generate $10.6 billion in consumer surplus for underbanked households each year.

Whether policymakers should protect users of AFS by mandating lower check-cashing fees or by nudging them towards deposit accounts through shorter hold times remains an open question. As it stands, current initiatives appear to work at cross-purposes: low check-cashing rate caps and long check-hold times prompt many to favor AFS, while other efforts seek to move AFS users into the mainstream banking system. These potentially conflicting goals notwithstanding, our results provide novel evidence on the likely impact of such reforms and can serve as a guide for financial regulators who have previously relied exclusively on surveys as a basis for their policies.

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Tables & Figures

Figure 1: Spring Bank's price schedule before and after the price cut in March 2012 (top) and the proportion of checks that were cashed instead of deposited by month (bottom).

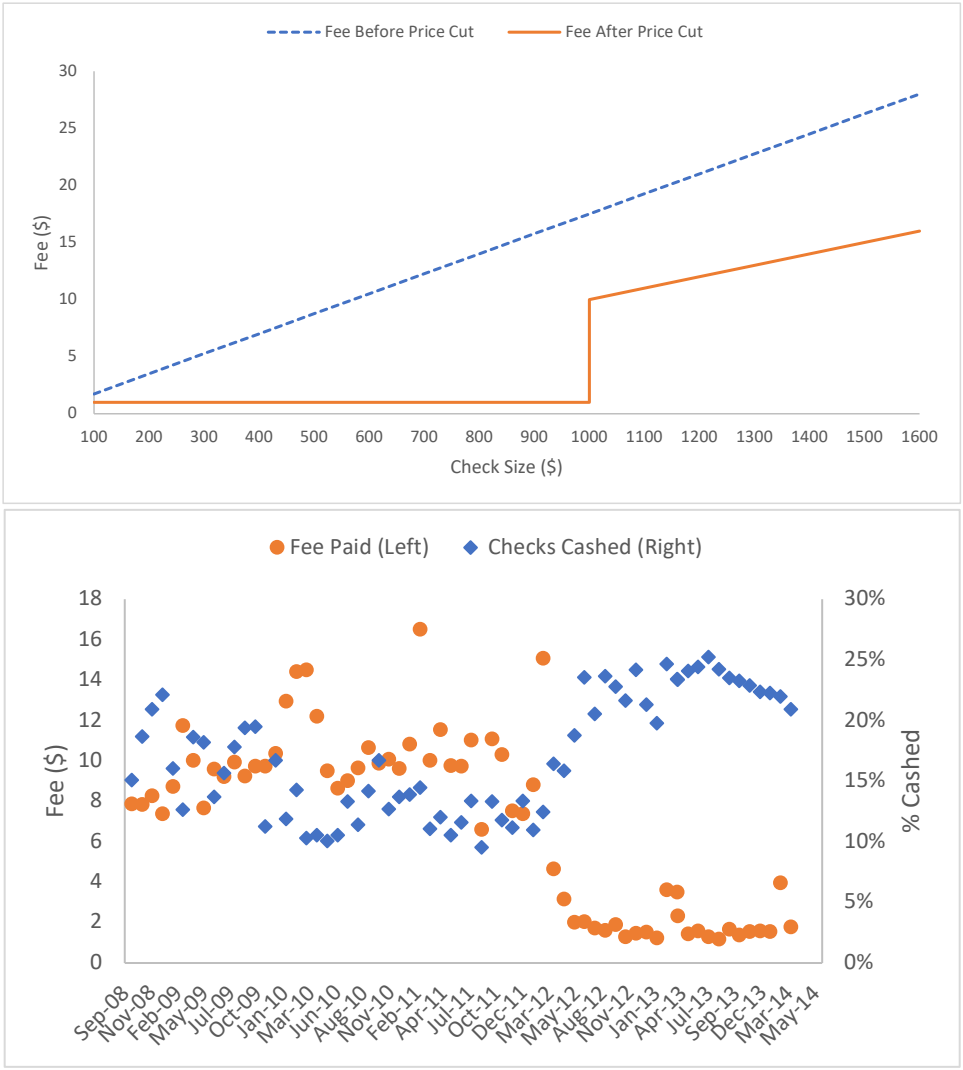

Table 1: Summary statistics of transactions from customers with deposit accounts at Spring Bank.

Variable	**Mean**	**Std. Dev.**	**Min.**	**Max.**
Cash Check	0.18	0.384	0	1
Check Cashing Fee	10.218	14.593	1	87.5
Face Value	840.190	959.582	100.01	5000
Distance	0.736	0.851	0.012	2.996
Days Until Check Clears	2.571	1.099	1	5
Days Until Check Clears — 1	0.119	0.323	0	1
Days Until Check Clears — 2	0.519	0.5	0	1
Days Until Check Clears — 3	0.07	0.256	0	1
Days Until Check Clears — 4	0.257	0.437	0	1
Days Until Check Clears — 5	0.035	0.184	0	1
Post Check Cashing Price Cut	0.513	0.5	0	1
N		46669		

Notes: The variable *Cash Check* is equal to zero if the transaction is a deposit and one if it is check cashing. The variable *Check Cashing Fee* is the dollar amount an account holder must pay to cash his or her check for a given transaction. The variable *Face Value* is the dollar amount of the check for a given transaction. The variable *Days Until Check Clears* is the number of days an account holder must wait to receive the full amount of his or her check following a deposit, while the variables *Days Until Check Clears — N* are equal to one if the account holder must wait N days for his or her check to clear and zero otherwise. The variable *Post Check Cashing Price Cut* is equal to zero if the transaction occurred before Spring Bank's price cut for check-cashing fees in March 2012 and one after.

Table 2: Percentage of checks cashed rather than deposited by number of days until check clears.

	Days Until Full Check Clears					
	1	2	3	4	5	Total
A. By Period						
Pre Price-Cut	7.11	10.70	18.49	20.61	20.69	13.62
Post Price-Cut	12.63	17.90	24.85	32.48	34.60	22.22
B. By Income						
Low Income	8.90	19.25	19.97	30.92	33.82	21.15
High Income	4.84	4.41	3.12	5.04	5.13	4.56
C. By Check Size on Non-Holiday Monday–Wednesday						
\$150-200	7.01					
\$200-250		15.86				

Notes: *Pre Price Cut* refers to transactions that occurred before Spring Bank's price cut for check-cashing fees in March 2012 and *Post Price Cut* refers to transactions that occurred after. The variable *Low Income* is equal to zero if a deposit-account holder makes between 6–24 transactions in a calendar year with an aggregate face value exceeding \$20,000 and one if he or she makes between between six and twenty-four transactions in a calendar year with an aggregate face value less than \$20,000.

Table 3: Model results for choice to cash or deposit check among deposit account holders.

DV: 1(Cash Check)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Check Cashing Fee	-0.0526***	-0.0541***	0.0168	-0.0516***	-0.0564***	0.0540	-0.275**	-0.0474***	-0.0384
	(0.0124)	(0.00509)	(0.0173)	(0.0138)	(0.0129)	(0.0592)	(0.0917)	(0.0142)	(0.0373)
Days Until Check Clears	0.587***	0.605***	0.644***	0.476***	0.629***	0.352*	1.485***	0.761***	1.800***
	(0.0750)	(0.0422)	(0.0727)	(0.101)	(0.0791)	(0.155)	(0.219)	(0.0926)	(0.365)
Distance	-0.173	0.0975	-0.179	-0.105	-0.0369	-0.0351	0.0475	-0.116	-0.352*
	(0.158)	(0.295)	(0.158)	(0.151)	(0.0978)	(0.0985)	(0.356)	(0.181)	(0.176)
Face Value	-0.000152	0.000753***	-0.00105***	0.000573**	0.000394*	-0.00119	-0.0118***	-0.000258	-0.00114*
	(0.000183)	(0.0000798)	(0.000266)	(0.000220)	(0.000164)	(0.000894)	(0.00310)	(0.000206)	(0.000565)
Post Price Cut			0.758***						
			(0.162)						
Low Income					1.426***	0.596			
					(0.366)	(0.546)			
Low Income X Days						0.279*			
						(0.137)			
Low Income X Fee						-0.117*			
						(0.0595)			
Low Income X Face						0.00165			
						(0.000904)			
Constant	-2.659***		-3.088***	-1.788***	-4.174***	-3.352***	-1.780**	-3.074***	-5.585***
	(0.186)		(0.193)	(0.240)	(0.400)	(0.556)	(0.603)	(0.218)	(1.004)
Observations	46669	21293	46669	14905	16662	16662	3940	30315	549
Pseudo R^2	0.090	0.035	0.097	0.043	0.068	0.070	0.063	0.076	0.152

Robust standard errors clustered by customer in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Notes: logit regressions in which the dependent variable is equal to zero if the customer deposits a check and one if he or she cashes it. All specifications include day and month fixed effects and controls for the check's face value and customers' distance from Spring Bank. The variable *Post Price Cut* is equal to zero if the transaction occurred before Spring Bank's price cut for check-cashing fees and one after. The variable *Low Income* is equal to zero if a deposit-account holder makes between 6–24 transactions in a calendar year with an aggregate face value exceeding $20,000 and one if he or she makes between between six and twenty-four transactions in a calendar year with an aggregate face value less than $20,000. Specifications (1)–(3) include the entire sample of transactions among deposit-account holders, with specification (2) including account-holder fixed effects. Specification (4) uses a sample restricted to customers who made a transaction in the pre-cut period. Specifications (5) & (6) use a sample restricted to those customers making between between six and twenty-four transactions in a calendar year. Specification (7) uses a sample restricted to checks between $150 and $250 for transactions made on a non-holiday Mondays, Tuesdays, or Wednesdays. Specification (8) uses a sample restricted to weekdays. Specification (9) uses a sample restricted to holidays that occur on different days of the week each year.